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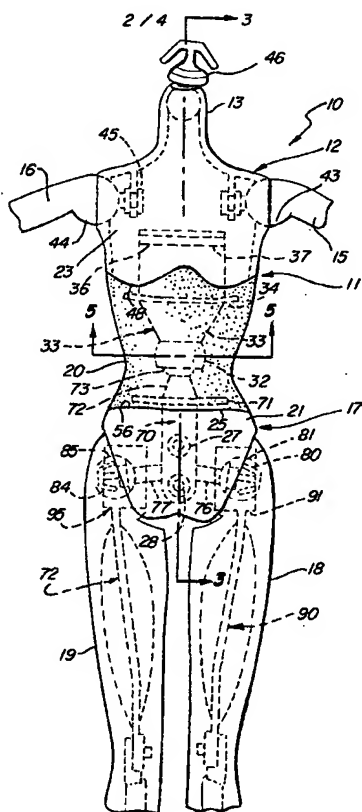
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DOLL HAVING REALISTIC TWISTING MIDRIFF



(57) Abstract: A doll body supports a pair of arms (15, 16) and a pair of legs (18, 19) upon an upper body portion (12) and a lower body portion (17) respectively. The upper body supports an upper body armature (30) having a downwardly open socket (32). The lower body supports an upwardly extending ball (73) received within the socket (32) to provide a ball and socket joint between the upper and lower body portions. The body further includes a flexible soft midriff portion (20) having a realistic contour and texture which is molded upon the upper body armature and lower body armature (70) to encapsulate the ball and socket joint and provide a continuous flexible body portion between the upper and lower bodies. The molded midriff portion (20) is formed in a realistic contour and texture to facilitate dressing the doll in bare midriff fashions.



WO 01/08776 A1

DOLL HAVING REALISTIC TWISTING MIDRIFF

SPECIFICATION

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Field of the Invention

10 This invention relates generally to fashion dolls
and particularly to those fabricated to have movable
and articulated body parts.

Background of the Invention

15 Fashion dolls are a well known and a very popular
type of doll toy product. While the fabrication of
fashion dolls has varied some what through the years,
generally all are fabricated of relatively rigid
molded plastic components which include a torso or
20 main body having a neck supporting a head together
with articulated arms and legs all of which usually
formed of a relatively rigid molded plastic. In most
fashion dolls, arms and legs move to facilitate
dressing the doll in various interchangeable clothing
25 garments. In addition, most fashion dolls are
sufficiently articulated to be capable of being posed
in various positions such as sitting, standing or
lying prone. A variety of cooperating accessories are
also used with fashion dolls which have included such
30 devices as cars, houses, work areas such as offices
and campers or the like.

One of the more interesting aspects of fashion
dolls is the play pattern which utilizes a variety of

stylish and often very fashionable garments which the dolls may wear. Much of the appeal of fashion dolls involves the use of such garments. Notsurprisingly, practitioners in the toy arts providing fashion dolls often strive to make available garments which are in tune with the latest styles and fashions or which fit a particular selected theme. One style or fashion which periodically rises in the fashion world involves a bare midriff look or style. The utilization of such bare midriff styles present substantial difficulty for manufactures of fashion dolls in that the torso which is exposed in a typical fashion doll includes various unnatural visible joint structures or structural elements for example, US Patent 3,942,284 issued to Kublan sets forth a DOLL WITH SEVEN SPHERICAL TORSO JOINTS AND FIVE APPENDAGES HELD BY THREE-SECURED ELASTIC MEMBERS having a doll utilizing a torso formed of an upper torso and lower torso joined by a ball joint together with a pair of arms and a pair of legs pivotally joined to the upper and lower torso portions. A single elastic member extends from the lower torso through the upper torso and into the doll head while second and third elastic members are stretched between the arm pair and the leg pair.

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US Patent 4,968,282 issued to Robson et al. sets forth a POSEABLE DOLL constructed of sub units connected to one another by ball and socket joints. A skin which encloses the sub units is secured to the sub units by insertion of appendages into sockets in the sub units and by means of a fastener which snaps into a groove pinning the skin to the doll.

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US Patent 3,699,710 issued to Glass et al. sets forth a DOLL JOINT having a doll body defining upper and lower torso components movably related to each other and characterized by the connection of the torso components so as to permit rotational movement therebetween.

US Patent 3,425,155 issued to Ryan et al. sets forth a DOLL CONSTRUCTION FOR NATURAL MOVEMENTS AND POSITIONS having an upper and lower torso joined by a rotational attachment. The upper and lower torso portions of the doll as well as the head to neck attachment of the doll is rotatable with respect to a plane of rotation which is angled by an acute angle relative to the height of the doll body.

US Patent 4,135,327 issued to Sapkus et al. sets forth a DOLL CONSTRUCTION WITH PIVOTABLE TORSO MEMBERS having upper and lower hollow torso members supportable in an upright position along the longitudinal center line of the doll. The doll torso portions are adapted to be pivoted with respect to each other about an axis angled at approximately thirty degrees from the longitudinal axis of the doll.

US Patent 4,662,857 issued to Quinn et al. sets forth an ARTICULATED SOFT DOLL CONSTRUCTION ASSEMBLY in which a soft skin covers a soft head and a soft torso of a doll. The torso has a first skin covering a fiber filler material formed with an opening in which a neck connecting member is received. A second soft skin cover is used to cover a soft head filled with a fiber material. A neck plug is received

through an opening in the head and the second soft skin cover.

US Patent 4,723,932 issued to Kelley et al. sets forth a TOY DOLL HAVING ARTICULATED ARMS AND A TILTABLE UPPER TORSO in which upper and lower torso portions are joined at a ball and socket joint. The upper torso is coupled to the lower torso by a rotatable shaft which allows tilting thereof.

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US Patent 4,954,118 issued to Refabert sets forth FLEXIBLE BODIED DOLLS having a plurality of rigid or semi-rigid members embedded within the body. The rigid or semi-rigid members form a supporting skeleton for the doll and facilitate posing by bending the doll and its supporting members.

15

US Patent 4,995,846 issued to Mariol sets forth a TOY FIGURE WITH PIVOTAL LOWER TORSO having a lower torso and legs defining an angled plane together with an upper torso, arms and head defining a correspondingly angled plane and a rotatable coupling therebetween. The angled plane about which the upper and lower portions of the toy figure are rotatable causes the angle between body portions to change as the figure is rotated.

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US Patent 3,124,901 issued to Beebe sets forth a BALL JOINT BETWEEN DOLL HEAD AND BODY which facilitates a snap-in attachment and pivotal support of a doll head upon the neck and shoulders of a doll body.

30

US Patent 5,752,869 issued to Huff sets forth a TOY CONSTRUCTION SET suitable for modeling an animal, bird, insect, dinosaur humanoid figure. A skeleton having a plurality of snap-fitted ball and socket
5 members which may be interchanged facilitates the adaptation to various types of figures.

While the foregoing described prior art devices have improved the art and in some instances enjoyed
10 commercial success, there remains nonetheless a continuing need in the art for ever more improved, interesting and realistic fashion dolls.

Summary of the Invention

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Accordingly, it is a general object of the present invention to provide an improved fashion doll. It is a more particular object of the present invention to provide an improved fashion doll which
20 presents a realistic appearing twistable torso suitable for use with "bare midriff" fashions or the like.

In accordance with the present invention there is
25 provided a doll comprising: an upper body having a neck, a lower edge and a pair of arms; an upper body armature joined to the upper body and having a downwardly extending first support; a lower body having a pair of legs and an upper edge; a lower body
30 armature joined to the lower body and having an upwardly extending second support; a ball and a socket joined to the first and second supports to form a ball and socket joint between the upper body armature and the lower body armature, the first and second

armatures supporting the upper and lower bodies such that a space exists between the lower edge and the upper edge; and a midriff formed of a soft resilient material enclosing the ball and socket joint and
5 extending between the upper edge and the lower edge to span the space.

Brief Description of the Drawings

10 The features of the present invention, which are believed to be novel, are set forth with particularity in the appended claims. The invention, together with further objects and advantages thereof, may best be understood by reference to the following description
15 taken in conjunction with the accompanying drawings, in the several figures of which like reference numerals identify like elements and in which:

Figure 1 sets forth a front perspective view of a
20 fashion doll body constructed in accordance with the present invention;

Figure 2 sets forth a partial front view of the present invention doll having the supporting skeletal
25 members shown in invisible dash-line;

Figure 3 sets forth a section view of the present invention doll taken along section lines 3-3 in Figure
2;

30 Figure 4 sets forth a perspective assembly view of the present invention doll;

Figure 5 sets forth a section view of the present invention doll taken along section lines 5-5 in Figure 2.

5 Description of the Preferred Embodiment

Figure 1 sets forth a front perspective view of a doll constructed in accordance with the present invention and generally referenced by numeral 10.

- 10 Doll 10 includes a doll body 11 having an upper portion 12, a midriff 20, and a lower body 17. Upper body 12 is formed of a front portion 23 and a rear portion 24 and supports a pair of arms 15 and 16 in the manner set forth below in greater detail.
- 15 Similarly, lower body 17 is formed of a front portion 21 and a rear portion 22 and supports a pair of legs 18 and 19 in the manner set forth below in greater detail. Midriff 20 is joined to upper body 12 along a seam 26 and is joined to lower body 17 along a seam
- 20 25. Upper body 12 further defines an upwardly extending neck 13 having a head connector 46. For purposes of illustration, the lower portion of a typical doll head 14 is shown in dash-line representation. It will be understood that head 14 is
- 25 connectable to head connector 46 in accordance with conventional fabrication techniques (not shown).

- In accordance with the present invention, upper body 12 and arms 15 and 16 are preferably fabricated
- 30 of a relatively rigid molded plastic material or the like. Front portion 23 and rear portion 22 are joined utilizing conventional fabrication techniques such as sonic welding, thermal welding or adhesive attachment or other equivalent attachments. In further

accordance with the present invention, lower body 17 together with legs 18 and 19 are also preferably fabricated of a relatively rigid material such as molded plastic. In further accordance with the present invention, midriff 20 is fabricated of a soft resilient flexible material such as rubber or the like and is supported by an upper body armature and a lower body armature joined by a ball and socket structure in the manner set forth below in greater detail. Suffice it to note here, that the underlying skeleton coupled between upper body portion 12 and lower body portion 17 which passes through and which supports soft flexible midriff 20 utilizes a ball and socket coupling within midriff 20 to permit upper body 12 and lower body 17 to be twisted about a vertical axes relative to each other. In accordance with an important aspect of the present invention, midriff 20 is generally contoured and textured to closely resemble human skin in both color and flexing characteristics. Accordingly, the twisting motion between upper body 12 and lower body 17 is accommodated by the flexibility of midriff 20. In further accordance with an important aspect of the present invention, the unique structure of midriff 20 and the supporting armatures therein maintains a realistic natural midriff appearance for body 11 despite its capability to twist or flex. Thus, in common to prior art devices which accomplish such twisting or flexing capability at the expense of unrealistic and visible joint structures, the present invention doll is uniquely configured and constructed to allow the doll to wear a variety of so-called "bare midriff" fashion garments.

Figure 2 sets forth a front view of doll 10 showing the underlying structure and supporting armatures thereof in dash-line or invisible representation.

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As described above, doll 10 includes an upper body 12 and a lower body 17 coupled by a resilient midriff 20. As is also described above, upper body 12 supports a neck 13 having a head connector 46 supported therein. A pair of arms 15 and 16 having arm bearings 41 and 45 respectively and ball ends 43 and 44 are pivotally secured to upper body 12. Upper body 12 defines a lower edge 48 which meets midriff 20 to form a seam 26. Similarly, lower body 17 defines an upper edge 56 which meets midriff 20 to form a seam 25.

Lower body 17 supports a lower body armature 70 secured therein by cooperating posts 27 and 28 in the manner seen in Figure 3. Lower body armature 70 includes a pair of outwardly extending hip supports 76 and 77 which in turn support a pair of spring clips 80 and 84. Spring clips 80 and 84 are received within a pair of split balls 81 and 85. Lower body armature 70 further includes a horizontally disposed plate 71 and an upwardly extending ball support 72. A ball 73 is supported upon ball support 72.

Doll 10 further includes a pair of leg armatures 90 and 92 upon which legs 18 and 19 are formed. In accordance with conventional fabrication techniques, leg armatures 90 and 92 are molded into legs 18 and 19. Thus, a rigid structure for legs 18 and 19 may be obtained while utilizing a some what softer more

realistic material for legs 18 and 19. Leg armature 90 defines a hip socket 91 receiving split ball 81 and spring clip 80. Similarly, leg armature 92 defines a hip socket 95 which receives split ball 85 and spring clip 84. The resulting assembly of legs 18 and 19 and lower body armature 70 provides pivotal attachment of legs 18 and 19.

In further accordance with the present invention, body 11 includes an upper body armature 30 having a pair of forwardly extending supports 36 and 37. Upper body armature 30 further includes a rearwardly extending flange 35 (seen in Figure 4) which is supported within grooves 50 and 51 or rear portion 24 (also seen in Figure 4). Suffice it to note here, that upper body armature 30 is secured within upper body 12 in a rigid attachment. Upper body armature 30 further includes a downwardly extending housing supporting a generally horizontal plate 34. Plate 34 in turn supports a downwardly extending socket support 33 having a socket 32 joined thereto. In accordance with the structure set forth below in Figures 3, 4 and 5 in greater detail, ball 73 is pivotally supported within socket 32.

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In the preferred fabrication of the present invention, midriff 20 is molded upon upper body armature 30 after socket 32 receives ball 73. Toward this end, plates 34 and 71 are structured to grip the material of midriff 20 as midriff 20 is molded thereon. Once midriff 20 is molded upon the combination of upper body armature 30 and lower body armature 70, the attachment between upper body 12 and lower body 17 is complete and the realistic midriff

appearance and twisting and flexing action thereof is provided.

Figure 3 sets forth a section view of doll taken
5 along section lines 3-3 in Figure 2. As described
above, doll 10 includes a body 11 formed of an upper
body 12 and a lower body 17 joined by a flexible
midriff 20. As is also described above, upper body 12
10 is formed of a front portion 23 and a rear portion 24
joined by adhesive attachment. Upper body 12 defines
a neck 13 supporting a head connector 46 which is used
in accordance with conventional fabrication techniques
to secure a conventional doll head (not shown). Front
portion 23 of upper body 12 defines a lower edge 48
15 while rear portion 24 thereof defines a lower edge 47.
An arm baring 41 rotatably supports arm 15 (seen in
Figure 2).

Lower body 17 is formed of a front portion 21 and
20 a rear portion 22 joined by conventional attachment
such as adhesive attachment or the like. Front
portion 21 defines a pair of rearwardly extending
bosses 100 and 101 while rear portion 22 defines a
pair of forwardly extending posts 27 and 28. Posts 27
25 and 28 are received within bosses 100 and 101 and
secured by conventional means such as adhesive
attachment or the like.

In accordance with the present invention, an
30 upper body armature 30 includes a flange 35 received
within a pair of grooves 50 and 51 (groove 50 seen in
Figure 4) both of which are formed in rear portion 24.
Upper body armature 30 further includes a downwardly
extending housing 31 having a plate 34 extending

therefrom. A socket support 33 extends downwardly beyond plate 34 and supports a socket 32. Socket 32 includes a pair of limit tabs 105 and 106.

5 A lower body armature 70 defines a pair of apertures 78 and 79 which receive bosses 100 and 101 together with posts 27 and 28 to securely attach lower body armature 70 within lower body 17. Conventional attachment such as adhesive attachment or the like is
10 used to secure lower body armature 70. Lower body armature 70 further includes an upwardly extending ball support 72 and a laterally extending plate 71. Ball support 72 is joined to a ball 73 which is received within socket 32 of upper body armature 30.
15 Ball 73 defines a front opening 74 and a rear opening 75. As is better seen in Figure 5, front opening 74 receives limit tab 106 while rear opening 75 receives limit tab 105. The operation of limit tabs 105 and 106 within openings 75 and 74 is described below in
20 connection with Figure 5 in greater detail. Suffice it to note here, that the cooperative effect thereof, provides an angular limit on the twisting or pivoting range of motion between ball 73 and socket 32. This limits the twisting of midriff 20 a realistic degree
25 of motion to maintain realism.

As described above, front portion 21 of lower body 17 defines an upper edge 57 while rear portion 22 thereof defines an upper edge 56. Correspondingly, a
30 lip 55 receives edges 56 and 57 to provide a smooth seam 25 between midriff 20 and lower body 17. A similar smooth seam 26 is formed between midriff 20 and upper body portion 12 at edges 47 and 48.

Thus, the pivotal attachment between upper body 12 and lower body 17 provided by ball 73 of lower body armature 70 and socket 32 of upper body armature 30 together with the smooth flexible and realistically contoured molded on structure of midriff 20 combines to provide a novel doll fabrication which is suitable for wearing garments having a bare midriff or exposed midriff area. The degree of pivotal twisting of upper body 12 with respect to lower body 17 or vice versa is limited by the structure is limited by the structure of ball 73 and socket 32 to maintain a realistic range of motion and to avoid damage to the present invention doll. The attachment of ball 73 within socket 32 also provides additional strength which resists forces tending to stretch body 11 in a manner pulling upper body 12 and lower body 17 apart. The strength provided by upper body armature 30 and lower body armature 70 in resisting this force allows midriff 20 to be formed of a highly realistic feeling resilient material closely simulating the touch and feel of the human body. But for the provision of armatures 30 and 70, midriff 20 would of necessity need to be fabricated of a substantially stronger and therefore less realistic material.

25

Figure 4 sets forth a perspective assembly view of the present invention doll. As described above, doll 10 includes a front portion 23 and a rear portion 24 which are joined to form upper body 12 (seen in Figure 1). Rear portion 24 defines socket portions 60 and 62 while front portion 23 defines docket portions 61 and 63. In addition, rear portion 24 defines grooves 50 and 51 and bottom edge 47. Front portion 23 defines a bottom edge 48. When front portion 23 is

30

joined to rear portion 24, socket portions 60 and 61 form a shoulder socket as do socket portions 62 and 63. A pair of arms 15 and 16 having ball ends 42 and 43 together with arm bearings 41 and 44 are received
5 within the shoulder sockets thus formed.

In accordance with the present invention, an upper body armature 30 having a housing 31 supporting a rearwardly extending flange 35 and forwardly
10 extending supports 36 and 37 is captivated between front portion 23 and rear portion 24. This captivation results from the insertion of flange 35 within grooves 50 and 51 prior to the assembly of front portion 23 to rear portion 24. Upper body
15 armature 30 further includes a plate 34 supporting a downwardly extending socket support 33 which in turn supports a downwardly open socket 32.

Front portion 21 and rear portion 22 combine to
20 form lower body 17 (seen in Figure 1). A lower body armature 70 defines apertures 78 and 79 together with outwardly extending hip supports 76 and 77. Hip supports 76 and 77 further support spring clips 80 and 81 respectively. A pair of split balls 81 and 85
25 having slots 82 and 86 together with apertures 83 and 87 formed therein are configured to receive spring clips 80 and 84. A pair of legs 18 and 19 having supporting armatures 90 and 92 (armature 92 seen in Figure 2) define respective hip sockets 91 and 95.
30 Front portion 21 and rear portion 22 of lower body 17 are joined using conventional attachment such as adhesive attachment or the like, to captivate lower body armature 70 upon posts 27 and 28 passing through apertures 78 and 79 respectively. Once lower body

aperture 70 is secured within front portion 21 and rear portion 22, legs 18 and 19 are assembled by initially inserting split balls 81 and 85 into hip sockets 91 and 95 respectively. Thereafter, spring
5 clips 80 and 84 are forced through apertures 83 and 87 respectively and are resiliently locked therein to secure legs 18 and 19 to lower body armature 70.

Lower body armature 70 further includes a plate
10 71 having an upwardly extending ball support 72 which in turn supports a ball 73. Ball 73 defines a front opening 74 and a rear opening 85.

The assembly of doll 10 proceeds by joining lower
15 body aperture 70 to upper body aperture 30 as ball 73 is forced into socket 32 to provide the assembly shown in Figure 2. Once upper body aperture 30 is assembled to lower body aperture 70, midriff 20 is formed upon doll 10 to provide the completed doll shown in Figure
20 1. In the preferred fabrication of the present invention, midriff 20 is formed of a flexible resilient soft material such as rubber or the like and is molded directly upon the remainder of doll 10 to form lips 46 and 55 against edges 47 and 48 of front
25 portion 23 and rear portion 24 and against edges 56 and 57 of rear portion 22 and front portion 21. Thus, while midriff 20 is shown pre-formed for purposes of illustration in Figure 4, it will be understood that in the preferred fabrication of the present invention
30 shown in Figure 2, midriff 20 is molded upon upper body armature 30 and lower body armature 70.

The resulting structure assembled in the manner shown in Figure 4, provides the above described

resilient midriff having a realistic appearance together with the twisting action and high strength attachment provided by the ball and socket joint of ball 73 within socket 32.

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Figure 5 sets forth a section view of doll 10 taken along section lines 5-5 in Figure 2. Figure 5 is provided to more clearly shown the limitation of pivotal movement between ball 73 and socket 32 which
10 in turn limits the twisting or pivotal motion obtainable between upper body 12 and lower body 17. Accordingly, a ball 73 defining a front opening 74 and a rear opening 75 is received within a socket 32 in accordance with the ball and socket joint formed
15 between upper body armature 30 and lower body armature 70 shown in Figure 2. Socket 32 defines a limit tab 105 extending into opening 75 and a limit tab 106 extending into opening 74. Midriff 20 is shown molded upon socket 32 and ball 73 in the manner shown in
20 Figure 2.

In operation, twisting movement between upper body 12 and lower body 17 (seen in Figure 2) is accommodating by the flexing of midriff 20 together
25 with the rotation of ball 73 within socket 32. The rotation motion of ball 73 in either direction however, is limited by the extension of tabs 105 and 106. In this manner, the twisting movement or rotation of upper body 12 with respect to lower body
30 17 is limited to a realistic angular twist or pivoting motion.

It will be apparent to those skilled in the art that while the illustrative embodiment set forth in

Figures 1 through 5 utilizes a ball and socket joint between upper body armature 30 and lower body armature 70 in which upper body armature 30 supports a socket and lower body armature 70 supports a ball, the
5 reverse relationship of the ball and socket joint may be utilized without departing from the spirit and scope of the present invention. Thus, for example, it is equally within the present invention to provide a ball such as ball 73 supported upon support 33 of
10 upper body armature 30 and a socket such as socket 32 supported upon support 72 of lower body armature 70. The resulting structure is a simple reversal of the ball and socket elements with the identical performance and capabilities thus it is believed
15 clearly within the scope of the present invention to utilize a reversed ball and socket combination between armatures 30 and 70.

While particular embodiments of the invention
20 have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects. Therefore, the aim in the appended claims is to cover all such changes
25 and modifications as fall within the true spirit and scope of the invention.

THAT WHICH IS CLAIMED IS:

1. A doll comprising:

an upper body having a neck, a lower edge and a pair of arms;

an upper body armature joined to said upper body and having a downwardly extending first support;

a lower body having a pair of legs and an upper edge;

a lower body armature joined to said lower body and having an upwardly extending second support;

a ball and a socket joined to said first and second supports to form a ball and socket joint between said upper body armature and said lower body armature, said first and second armatures supporting said upper and lower bodies such that a space exists between said lower edge and said upper edge; and

a midriff formed of a soft resilient material enclosing said ball and socket joint and extending between said upper edge and said lower edge to span said space.

2. The doll set forth in claim 1 wherein said midriff is molded upon said first and second supports and said ball and socket joint.

3. The doll set forth in claim 2 wherein said ball includes an open portion and wherein said socket

includes a limit tab extending into said open portion; said limit tab and said open portion cooperating to limit the range of pivotal motion between said ball and said socket.

4. The doll set forth in claim 3 wherein said upper body armature includes a first extending plate formed on said downwardly extending first support.

5. The doll set forth in claim 4 wherein said lower body armature includes a second extending plate formed on said second upwardly extending support.

6. The doll set forth in claim 5 wherein said socket is formed on said first support and wherein said ball is formed on said second support.

7. The doll set forth in claim 1 wherein said socket is formed on said first support and wherein said ball is formed on said second support.

8. A doll comprising:

an upper body having an upper body armature;

a lower body having a lower body armature;

a ball and socket forming a ball and socket joint joining said upper body armature to said lower body armature and supporting said upper body and said lower body to form a space therebetween; and

a soft resilient midriff spanning said space and encapsulating said ball and socket joint.

9. The doll set forth in claim 8 wherein said midriff is molded upon said first and second supports and said ball and socket joint.

10. The doll set forth in claim 9 wherein said ball includes an open portion and wherein said socket includes a limit tab extending into said open portion, said limit tab and said open portion cooperating to limit the range of pivotal motion between said ball and said socket.

11. The doll set forth in claim 10 wherein said ball is supported upon said lower body armature and wherein said socket is supported upon said body armature.

12. The doll set forth in claim 8 wherein said ball is supported upon said lower body armature and wherein said socket is supported upon said body armature.

13. The doll set forth in claim 11 wherein said upper body armature includes a first extending plate formed on said downwardly extending first support.

14. The doll set forth in claim 13 wherein said lower body armature includes a second extending plate formed on said second upwardly extending support.

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FIG. 1

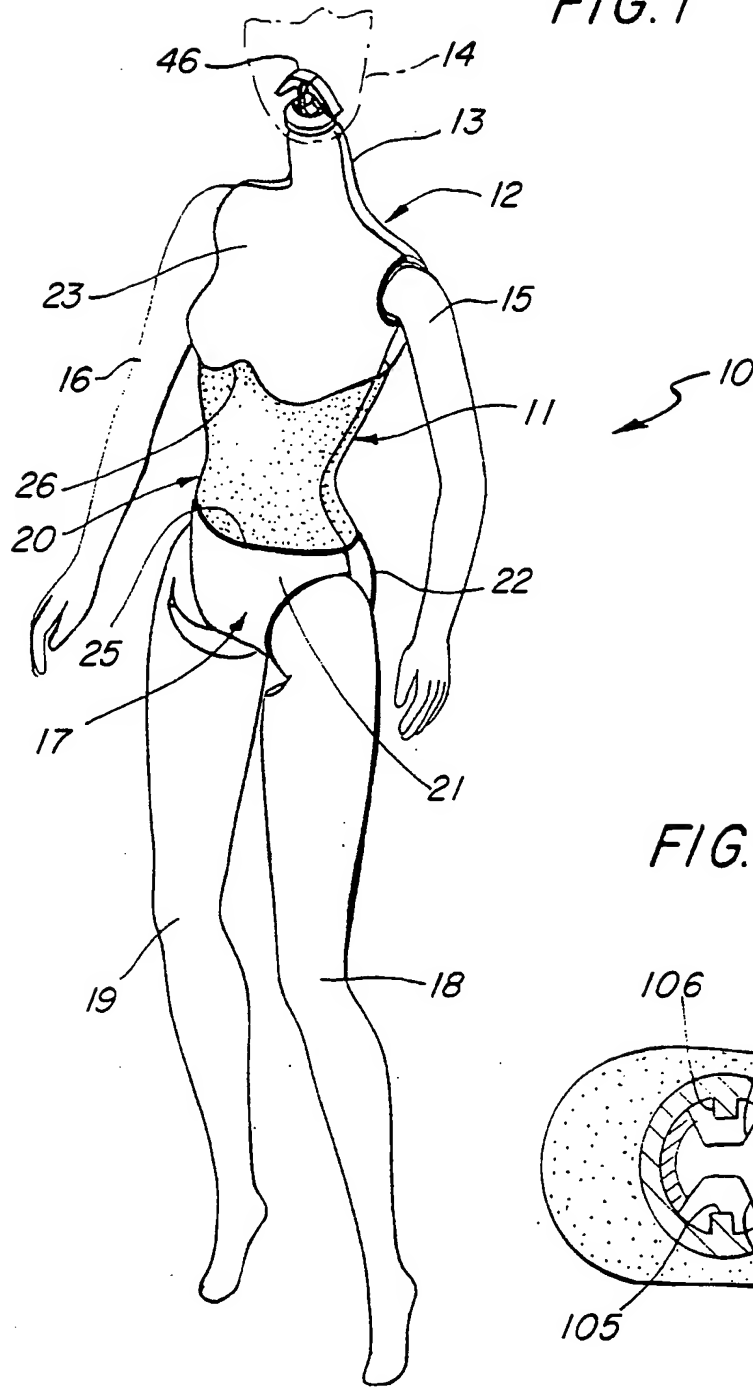
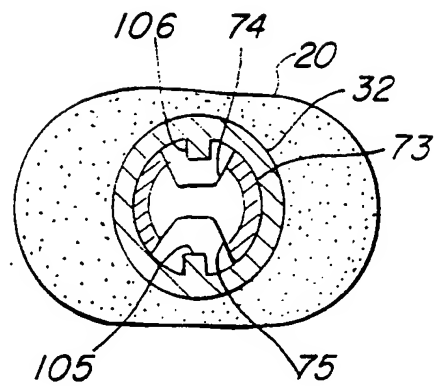
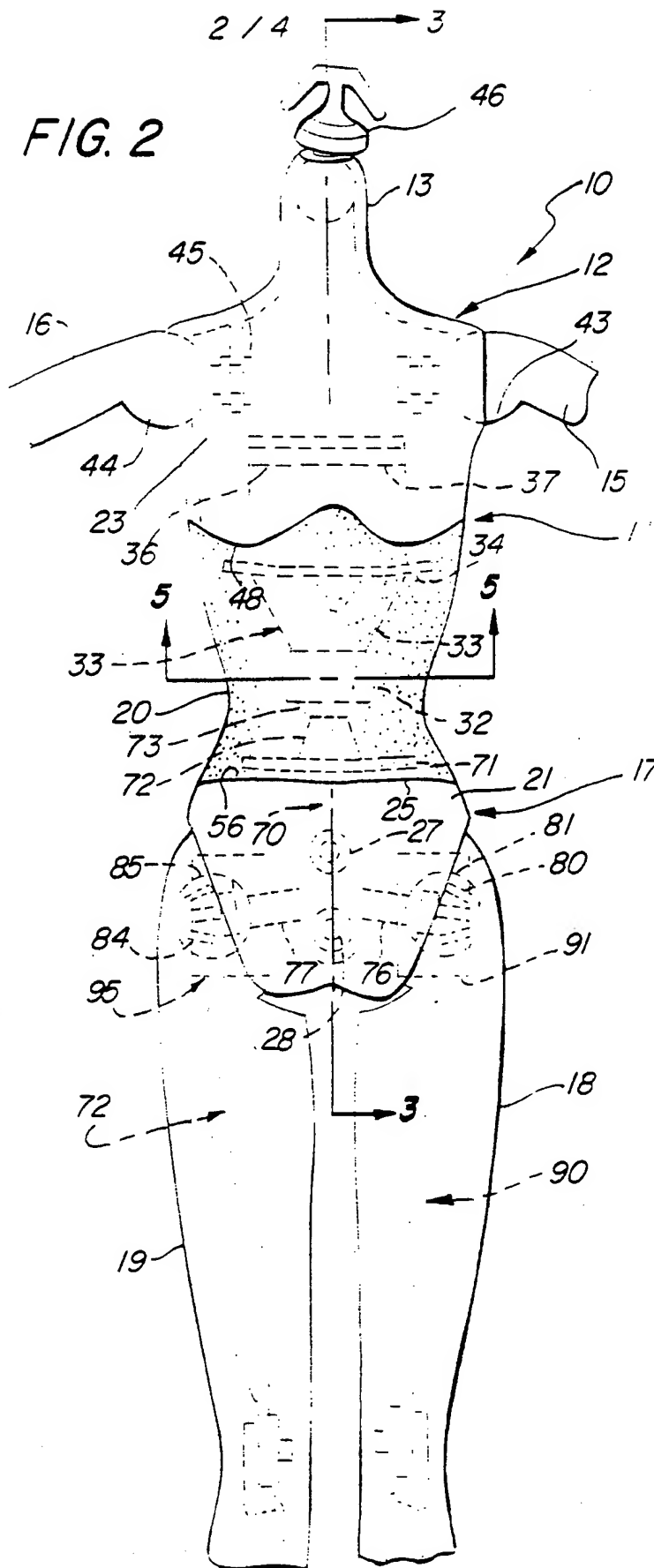


FIG. 5





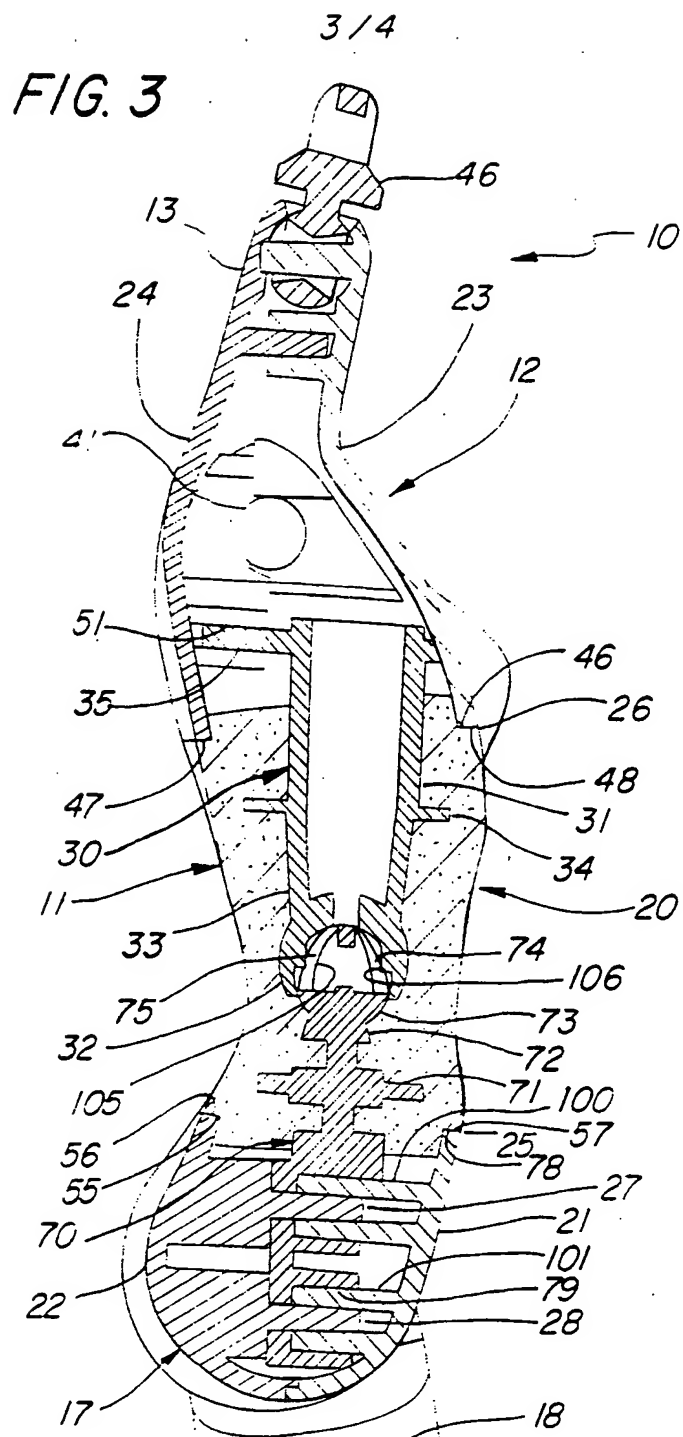
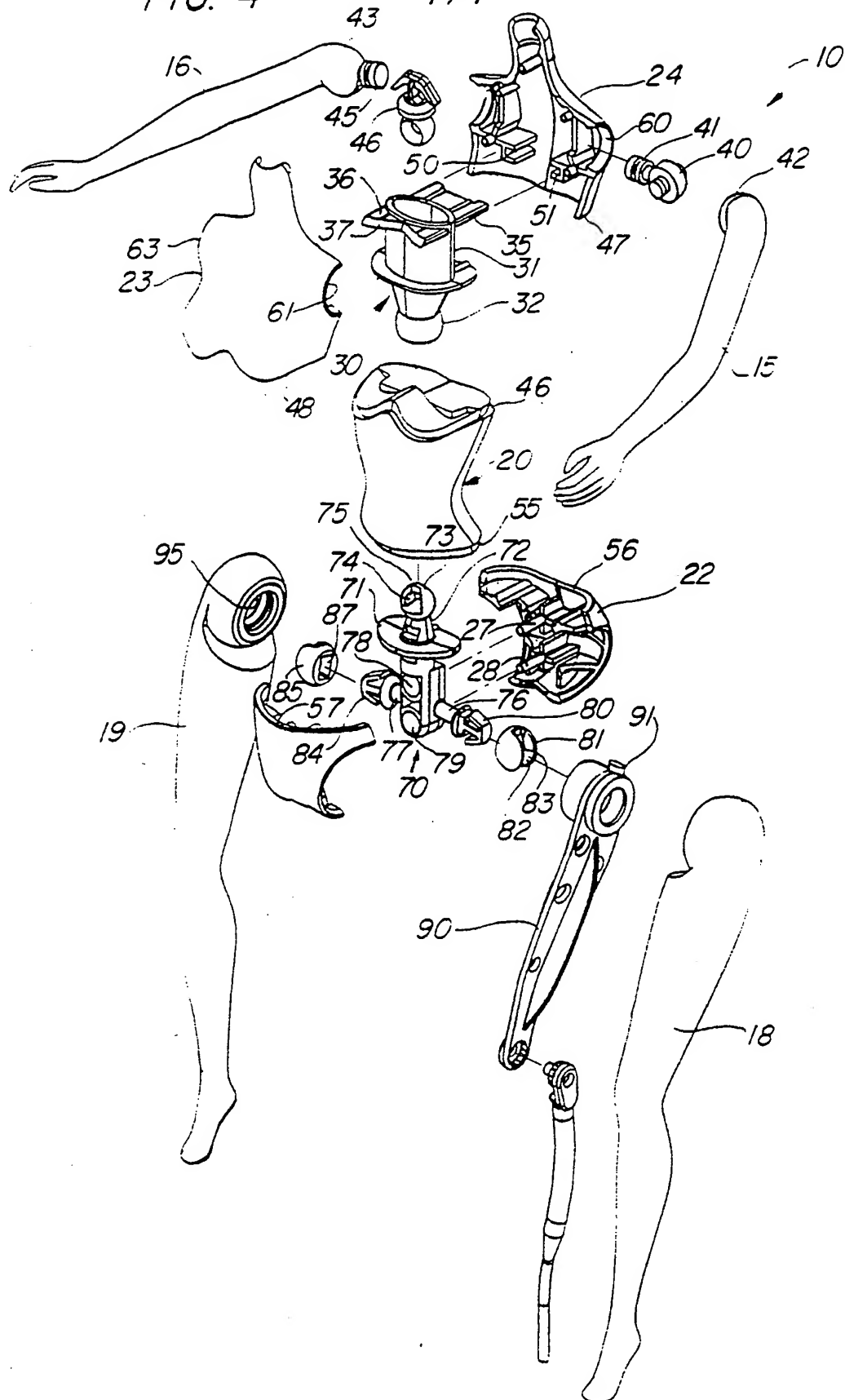


FIG. 4

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/13735

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63H 3/46

US CL : 446/381, 382

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 446/373, 375, 376, 379, 380, 381, 382, 383, 385

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST. toy or toys or doll(s), ball (w) socket, tab with groove, (cover or covering) (w) flexible.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,265,257 A (Buonamici) 09 August 1966, see entire document, especially 20 and 46.	1.4-6.8.12-1
X	US 2,129,421 A (Hales) 06 September 1938, see entire document especially figs 1 and 3.	1.7.8
X	US 4,968,282 A (Robson et al.) 06 November 1990, see entire document.	1.8
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Y		3,4.10.11.13
Y	US 3,837,008 A (Bahler et al.) 24 September 1974, see elements 3 and 12	3,4,10,11, 13,14
X.P	US 6,110,002 A (Langton) 29 August 2000, col 5, line 34.	1.2.8.9-11,13

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

14 DECEMBER 2000

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